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AUTHOR Fullilove, Robert E., III
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ABSTRACT

This discussion asserts that there is no significant difference between traditional instruction and remedial/developmental instruction in improving the academic achievement of skill-deficient students. Because the cognitive style of each learner reflects how learning tasks are approached and completed, matching strategies are needed that deal with both the cognitive and affective aspects of the student's personality. Current research indicates that individualized programs for such students are more likely to improve performance. Rather than continuing study to prove that remediation is successful, concentrating research on the development of individualized teaching techniques is advocated. (MAI)

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RESEARCH AND REMEDIAL/DEVELOPMENTAL PROGRAMS: NEW DIRECTIONS

(Paper presented at the National Conference on Remedial/ Developmental Studies in Post-Secondary Institutions, March 17-18, 1977, Chicago)

Robert E. Fullilove, III
Director of Research
New Jersey Educational Opportunity Fund

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In the past decade, much of the research conducted on remedial/developmental programs (hereafter, r/d programs) attempted to determine whether remediation was more effective than conventional classroom instruction in improving the academic performance of skills-deficient students. "Effectiveness" was defined in a variety of ways. In some studies, the grades or the attrition rates of students exposed to either type of instruction were compared while in others, post-test scores on an appropriate measure of achievement were examined. The results of many of these studies were often inconclusive, but in a significant number of instances, little or no evidence could be found to support the claim that students benefited more from exposure to remedial techniques (e.g. Leslie, 1976).[1]

Gordon (1977) has suggested that this type of research is misdirected and suffers from what he has termed "the generic treatment fallacy", that is, the assumption that there is one maximally effective instructional technique which will serve the needs of all students with skills deficiencies. Research has consistently demonstrated that learners differ greatly with respect to their learning styles, their interests, their level of mastery of the basic academic skills, and their learning rates, and it is probable, therefore, that no one instructional technique or learning strategy will meet all of their needs at all times. As a consequence, researchers who have diligently attempted to demonstrate that r/d programs "work" might find it more profitable, instead, to devise strategies and programs which, in Gordon's terms, provide each student with "the necessary conditions for learning in sufficient amounts".[2]

It is my contention that measures of cognitive style and personal ideology can be used to devise strategies to meet both the cognitive and affective needs of the skills deficient learner. Although these measures (specifically, the

Group Embedded Figures Test which is a measure of cognitive style, and the Rotter IE Scale which is a measure of personal ideology) have not been used extensively in either r/d programs or in the research conducted on them, it is highly probable that their use can be shown to result in significantly higher levels of achievement and lower attrition rates on the part of the students whom these programs serve.

II

One of the first problems one encounters in analyzing the results of r/d research is that "remedial instruction" and "remedial/developmental programs" are terms which refer to a wide variety of instructional practices and treatments. Furthermore, although these programs are generally designed for "skills deficient students", it is impossible, for all practical purposes, to develop a universally acceptable means of determining who is deficient and who is not, since these terms are usually defined locally at the campus level. For our purposes, therefore, a skills-deficient student will refer to any student who is considerably less proficient in the basic skills of reading, writing, and mathematics than the modal student on a given campus. "Remediation" and "r/d programs" will refer to any treatments which are employed to strengthen the academic achievement of such students.

The research which compared the impact of r/d instruction with regular classroom instruction was basically attempting to determine whether specific actions and techniques directed towards correcting a skills deficiency were more effective than placement in regular college classes where no specifically remedial activities were conducted. The basic difference between r/d instruction and regular instruction lies in the different instructional and behavioral-learning objectives which each pursues. Thus, while both types of instruction may very well use the same instructional techniques, r/d instruction is specifically designed to correct

a skill deficiency or strengthen a student's academic abilities and regular instruction is not. The fundamental question which was explored in research comparing r/d instruction to regular instruction was does the type of instruction influence achievement? Or, more specifically, does the skills-deficient student benefit more from the type of instruction that is designed specifically to meet his or her needs, or will such a student do just as well in a course where no such design is evident?

In most of this research a relationship was presumed to exist between the type of instruction students are given and their academic achievement. The expectation, of course, was that the exposure of skills deficient students to r/d programs would consistently be associated with higher levels of performance. Leslie (1976), Cross (1976) and others have concluded from their review of the literature, however, that this expectation is simply not supported by research findings, and it is reasonable to conclude in the face of that evidence that the type of instruction provided skills-deficient students does not materially influence academic achievement.[3]

In contrast, a model proposed by Carroll[4](1963) and later expanded somewhat by Bloom (1971)[5]posits the existence of a relationship between achievement, the time available for learning, and the quality of instruction provided the learner. One important feature of this model is that it provides us with a plausible explanation for the failure of researchers to detect any statistically significant difference in the performance of students receiving either r/d or conventional forms of instruction.

One may infer from the model, that such results are to be expected:

a) if both experimental and control groups are similarly distributed with respect to their aptitude for the subject(s) being taught;

b) if both groups are provided with the same block of time in which to master the subject, and

c) if both groups receive the same quality of instruction. (Here, quality of instruction assumes that both groups are provided with instructors, materials, and explanations of learning tasks, all of which are of approximately the same quality).

As we shall see, Bloom contended that in order to produce a significant difference in the level of achievement of two groups of students of similar aptitude, one would have to provide one group with "individualized instruction", that is, instruction designed to accommodate the learning styles and learning rates of each student.

A basic cornerstone of the model is the assumption that aptitude may be defined as the time required for a learner to master a set of learning tasks. The traditional view of aptitude held that it was essentially a measure of what and how much the student was capable of learning, and the high correlation between aptitude and achievement was thought to be conclusive proof that aptitude equals potential for learning. The Carroll-Bloom model, however, asserts that given the appropriate amount of time, the majority of students in any class have the "potential" to achieve high levels of performance.

> One type of support for this view is to be found in the grade norms for many standardized achievement tests. These norms demonstrate that selected criterion scores achieved by top students at one grade level are achieved by the majority of students at a later grade level. Further support is provided by studies of students who are allowed to learn at their own rate. These show that although most students eventually reach mastery of each learning task, some achieve it sooner than do others.[6]

It should be clear from the foregoing that, as an absolute minimum, learners must be provided with a sufficient block of time to complete a set of learning tasks if satisfactory levels of mastery are to be achieved. The type of instruction can influence achievement, we may infer from the Bloom-Carroll model, if instruction is being <u>individualized</u> so as to take advantage of the learning style and learning rate of the student. Specifically, Bloom envisioned the individualization of instruction as a process in which the mode of instruction (e.g., lecture, tutorial, etc.), the choice of instructor, the choice of instructional materials, and the sequence in which learning tasks were presented were

all designed to maximize student achievement by taking advantage of the particular way a given student would approach a learning task. Bloom asserted that given the appropriate amount of time, and given the appropriate type of instruction, 95 percent of the persevering students in any given class would achieve high levels of mastery and the correlation between the students' aptitude test scores and scores on an appropriate post-test would approach zero.[7] Individualizing instructional strategies to meet the needs of each student would, in other words, insure that every student would be possessed of the "potential" or the "aptitude" to master a course of study.

The major question which Bloom was unable to answer, however, was how does the instructor determine which factors must be considered in matching students to the appropriate instructional strategy? What cognitive and affective characteristics of the students and what characteristics of the instructional process must be weighed as students and instruction are matched? Bloom himself was not especially clear about how a "matching strategy" should be developed: "Perhaps," he wrote, "further research will reveal the best match between individuals and alternative learning resources. At present, we do not have firm evidence on the relations between student characteristics and instructional material or procedures."[8]

It is my contention, however, that the use of the Rotter IE Scale and the Embedded Figures Test can aid us significantly in making such matches, and that without such strategies, individualized instruction may not result in higher levels of achievement as expected (see: Sutton and Arnold, 1974).[9]

The Rotter IE Scale is particularly relevant for use in remedial programs because it has been used extensively in studies involving the non-traditional student who is entering higher education and r/d programs in ever-increasing numbers. As Cross (1971) has pointed out, this "new student" is not only more

likely to suffer from a skills deficiency than the type of student who has traditionally attended college in this country, he or she is also more likely to have developed, in her words, "attitudinal blockages to the learning process itself".[10] These blockages often take the form of a fear of failure in which the student refuses to invest time and energy in school or classroom tasks because he or she is convinced that failure is inevitable, no matter how diligently assignments may be pursued. It is probable that the high attrition rates which often accompany r/d programs are a result of the student's inability to continue to face the challenges and the threats posed by the classroom. For many, assignment to a r/d class is often the first in a series of blows to the ego, and if this trauma is followed by a set of experiences which suggest that the skill deficiency will not be eradicated overnight, students will often exhibit avoidance behavior which may ultimately result in their dropping out altogether.

Such students often confess to feelings of being powerless to improve either their academic skills or their performance in regular academic programs. Significantly, however, the individual's perception of personal powerlessness can be measured to some extent and, this measurement can serve as the foundation for both counseling and instructional strategies designed to improve the student's attitude towards self and work.

This measure, the Internal-External Control scale, was first developed by Rotter (1966) in an attempt to measure how individuals perceive the factors which control reinforcement. He found that individuals could be arranged along a continuum that went from a strong belief in internal control--that is, the perception that the individual controls whether or not (and the degree to which) one is reinforced--to a strong belief in external control--that is, the perception that one's life and its rewards are controlled by factors such as

"fate" or "luck" or the influence of "powerful others", all of whom are beyond the individual's control. The Rotter IE Scale was developed as a means of determining where on this continuum any given individual might be placed.[11]

A number of important studies conducted on "new students" have attempted to measure how such students are distributed with respect to their feelings of powerlessness, that is, the degree to which they perceive their lives to be either internally or externally controlled.

> Despite the research difficulties, exploration of the locus of control appears to be a fruitful avenue for those interested in helping new students. Unlike most of the secular characteristics studied, locus of control seems to bear a real and consistent relationship to achievement and aspirations. Thus, it is particularly important to determine whether new students do, in fact, tend to lack a sense of internal control. Thus far, the research, though plagued by the usual deficiencies of varied measures and exclusive preoccupation with black students, does suggest that a large portion of new students suffer from the belief that they are externally controlled, that they lack the power to manage their environment, and to obtain rewards by their own behavior.[12]

It should be noted, of course, that for many--particularly non-white and/or disadvantaged students--such perceptions are often well-founded. The fact still remains, however, that such students must be, as Cross (1971) observed, reoriented to the learning process and to the classroom if they are to achieve all that they are capable of achieving. Additionally, students with both a high degree of internal control and a serious skills deficiency may also be in need of counseling if it appears that they have unrealistically high expectations for themselves and their schoolwork. Such students may also become drop-outs if the disparity between expectation and actual performance is too great (Epps and Gurin; 1975).[13]

The relatively externally controlled student, as Gurin (1966) suggested should be reinforced after every successful completion of a task; moreover, steps should be taken to insure that opportunities for successful task-completion

occur as often as possible. This latter suggestion closely mirrors the objective of the "guaranteed success programs" described by Cross (1971) in which students are purposefully provided with learning tasks which are just slightly below their tested levels of competence. These tasks have a high probability of being successfully completed by the student and the rationale is that the greater the number of positive learning experiences the student encounters, the greater the liklihood that he or she will "risk" failure in future learning tasks and will persist in his or her studies. [14]

In general, then, the Rotter IE Scale can be tied to instructional and counseling strategies which seek to improve the students' belief in themselves and their abilities to successfully complete their schoolwork. The scale itself is easily administered and easily scored and does not require a great deal of training in order to be used. Its continued use in a carefully monitored setting may help r/d program personnel to improve their diagnostic/prescriptive techniques and, in so doing, improve the effectiveness of the instructional aspects of the program.

III

As I noted earlier, one of the necessary conditions for individualizing instruction is some means of assessing some of the characteristics of the student's learning style. Knowledge of these characteristics would provide instructors with a means of matching appropriate instruction with some relevant aspect of the student's approach to learning tasks. We know, for example, that learners differ with respect to the types (and the amounts) of reinforcement they will require to complete a task adequately. If the instructor possessed some means of determining which students required which types (and what amounts) or reinforcement, greater levels of achievement should be observed.

Witkin, Moore, Goodenough, and Cox (1975), in an extremely comprehensive review of the research conducted during the past two decades into cognitive style, have concluded that the relative field independence-dependence of the learner has a great deal to do with the manner in which a learning task will be approached.[15] The research indicates that field-independent learners differ from field-dependent learners with respect to 1) the type of material they are most likely to learn, 2) the manner in which they react to reinforcement, 3) the manner in which they use (or fail to use) mediators in learning certain material, 4) the manner in which they react to salient cues in certain learning tasks, and 5) the manner in which they react to instructors of similar and dissimilar cognitive styles. Because of the consistency with which learners with different cognitive styles react to various aspects of the teaching-learning process, it seems reasonable to conclude that knowledge of a student's cognitive style may be of invaluable assistance to both r/d instructors and researchers in the creation of and evaluation of individualized instructional programs for skills deficient students.

The early research into cognitive style demonstrated that individuals differ in their ability to perceive certain geometric figures which are embedded in a surrounding visual field. Relative field-independence is associated with individuals who are able to distinguish the figure from the field whereas relative field-dependence is associated with those individuals who tend to confound the figure with the surrounding field. Although this may appear to be a modest difference in perceptual acuity, in actual fact, field-independence and dependence are associated with fundamental differences in the manner in which individuals, perceive, perform cognitive tasks, and behave in certain types of social settings.

Witkin observes that human beings cannot be conveniently classified as either totally field-dependent or field-independent; they exist on a continuum which ranges from one extreme to the other. On the whole, however, when we examine the behavior of groups of field-dependent and independent learners, we can observe clear-cut differences in the way they perform certain learning tasks. Field-independent thinkers, for example, tend to be analytical in their approach to these tasks. They are not necessarily more efficient learners, nor are they better achievers than field-dependent learners, since various studies have failed to uncover any statistically significant correlation between cognitive style and achievement. However, the field-independent learner is much more likely than his field-dependent peer to use an analytical approach to learning tasks which will involve the use of mediators in the learning of concepts, that is, they are much more likely to develop conceptual tools to organize and manage a learning task than field-dependent learners who, by contrast, are much less likely to manipulate ideas, test hypotheses, or use other, similar conceptual tools to aid them in learning concepts or solving problems.

Field-dependent learners are described as having a "global cognitive style", that is, they tend, in a manner of speaking, to be unable to separate the trees from the forest. Unlike field-independent individuals who seem to perceive themselves and their environment as two separate and distinct entities, the field-independent individual is much more likely to see himself and his world as a unified whole, and this is particularly true when one examines the field-dependent individual and his social environment. Field-dependent people, Witkin wrote, "have what in effect amounts to a sensitive radar system, selectively attuned to social components of the environment".[16] Thus, they tend to be perceived by others and themselves as more outgoing, better liked, and more affable than field-independent people. Field-dependent individuals appear to be more attentive to social cues, and they seem to enjoy being with others more than field-independent individuals. Of particular interest to us here, however, are the findings of the research into cognitive style and the teaching-learning process. A brief discussion follows:

1) Learning-Teaching Materials

Various studies (e.g. Ruble and Nakamura, 1972) have demonstrated that learners differ with respect to the kind of material they seem to master best. Field-dependence has been associated with greater levels of achievement when material with social content must be learned.[17] Conversely, the analytical style of the field-independent learner suggests that they tend to learn abstract, scientifically (or mathematically) oriented material better than field-dependent learners. Thus, the material which an instructor may use to illustrate a concept or to aid students in mastering a concept can be chosen according to the field orientation of the individual student. The choices of material will not, of course, guarantee that higher levels of achievement will occur, but it

does provide the instructor with some criteria for choosing the material which stands the greatest chance of succeeding with certain types of students.

2) Effects of Reinforcement

A number of studies have indicated, as one might expect, that field-dependent learners, with their heightened awareness of social situations, tend to be more influenced by certain types of reinforcement than field-independent learners. Field-dependent students tend to learn more when rewards are being offered for completion of a task and appear to be more adversely affected by punishment than field-independent students. Field-independent learners, by contrast, appear to learn as well under conditions of intrinsic reinforcement as they do when some sort of reward is provided for the completion of a task. As Witkin observes, "while applied research in the classroom has only just begun (Raab, 1973),[16] the evidence we have reviewed suggests that field-dependence-independence may provide a useful basis for predicting which students are likely to be affected by what kinds of reinforcement."[19]

3) The Use of Mediators in Learning

Students of different cognitive style differ in the way they approach problem solving tasks, organize concepts, and respond to feedback. As noted briefly in an earlier discussion, field-independent learners tend to use mediators--that is, organizational tools to aid in comprehending concepts or completing problem solving tasks--whereas field-dependent learners take a more passive approach to these learning situtations. Nebelkopf and Dreyer (1973), in a study of concept attainment, examined the learning curves of field-independent and dependent subjects who were provided with an opportunity to master certain concepts over a series of

trials.[20] The slopes of the learning curves from these trials provided some indication of how quickly the task was being completed as well as some clues as to how field-independent and dependent learners were approaching the task. Field-independent types, it would appear, used a hypothesis testing approach to the task in which rival hypotheses were explored, tested, and discarded until a given concept was mastered. Field-dependent subjects, on the other hand, appeared to take a "spectator approach" to the task in which no mediators were used. Field-dependent learners, it was concluded, are much less likely to impose any structure or order on a learning task of this sort than field-independent learners.

The implications for instructors are considerable. Field-dependent students appear to have greater difficulty than field-independent students with learning tasks which are unstructured. Field-independent students will provide structure and organization to such tasks while the field-dependent student's spectator approach to the task is likely to result in less efficient learning. It was also determined, however, that when the task to be mastered is structured or when there is no need to impose order on a body of learning a material, the disparity in the performance of field-independent and dependent learners disappears.

> The evidence we have reviewed suggests that their lesser use of structuring as a mediator may handicap field-dependent students in unstructured learning situations. There are probably many classroom situations where, because the material to be learned is not clearly organized, the field-dependent learner may be at a disadvantage. Field-dependent students may need more explicit instruction in problem-solving strategies or more exact definition of performance outcomes than field-independents, who may even perform better when allowed to develop their own strategies. Attention to cognitive-style difference in learning under more structured and less structured conditions, and detailed analysis of the problem-solving skills and strategies assumed for different learning tasks, are necessary.[21]

4) Cue Salience

Certain stimuli present in a body of material which students are to learn may be relevant or irrelevant to the learner's ability to perform certain learning tasks. As one might expect, field-dependent learners are much more likely to be distracted by irrelevant cues than field-dependent learners if the stimuli are sufficiently powerful. The propensity of the field-dependent learner to be distracted by certain obvious (but irrelevant) features of some learning material is, of course, related to their propensity to "fail to see the trees for the forest". For this reason, Witkin concludes, "one may expect, therefore, that field-dependent people would have particular learning difficulties under conditions in which cues useful for one concept definition become irrelevant in the context of a new learning problem. The evidence suggests that field-dependent people do indeed have difficulty breaking learning sets of this sort."[22]

Witkin notes that although cognitive styles tend to be stable over long periods of time, it is still possible, nonetheless, to aid field-dependent students to overcome their predilection for being confused or led astray by the salient cues present in certain materials, just as it is possible to get them to adopt hypotheses testing processes when confronted with certain problem-solving tasks. Clearly, a major task for r/d instructors who are concerned with strengthening the analytical skills (and the thinking processes) of the skills-deficient student will involve the development of strategies designed to reduce the salience of certain cues in particular learning situations.

5) Teacher-Student Interaction

Research into the teaching-learning process has revealed that teachers of different cognitive styles differ, not surprisingly, with respect to how they teach and how they perceive and react to students. For this reason, there is every reason to believe that student achievement may be related to classroom arrangements in which learners are matched or mismatched with the cognitive styles of their instructors. A number of studies (notably, that conducted by DiStefano, 1969) have already indicated that students matched with instructors of the same cognitive style tended to view each other positively, whereas students and teachers of different cognitive style tended to view each other negatively.[23] Can we assume, Witkin asks, that such positive perceptions will also result in greater levels of achievement if students and faculty are consistently matched according to cognitive style? Or, more importantly perhaps, if instructors are knowledgeable about how their own cognitive styles influence both the manner in which they teach as well as the manner in which students achieve, can this knowledge result in greater achievement on the part of students and more efficient instruction on the part of teachers? Obviously, such answers will only be forthcoming when more research is conducted, but at this point in time, it seems clear that examining the teaching learning process by focusing on the cognitive styles of the principle participants may yield some extremely useful data for the classroom practitioner.

CONCLUSIONS

I have tried to suggest consistently throughout this paper that remedial/developmental instruction is not sufficient, in and of itself, to improve the academic achievement of skills-deficient students to levels that would exceed the achievement these students would demonstrate if confronted with traditional, conventional instruction. I have suggested that attempts to individualize instruction for such students are much more likely to result in improved performance, but that this technique cannot be effective until strategies for matching students with instruction are developed. Such matching strategies may be developed which deal with both the cognitive and affective aspects of the student's personality. Measurements of the student's feelings of powerlessness as provided by the Rotter IE Scale can be invaluable to counselors who must aid students, particularly the "new students" to higher education, to become reoriented to the learning process. Knowledge of the student's cognitive style, on the other hand, may prove to be similarly invaluable in aiding both r/d instructors and researchers to develop and evaluate individualized programs of instruction for skills-deficient students.

The research of the past twenty years makes it abundantly clear that the cognitive style of the learner is the key to understanding a great deal about the ways in which learning tasks are approached and completed. Knowledge of these characteristics should be used in the prescription of learning and teaching strategies for the skills-deficient student and it can obviously be of continued use in our exploration into the dynamics of the teaching-learning process. Womack (1977)[24], for example, has reported impressive results in his use of factor-analytic techniques to explore how field-independent and dependent learners from

disadvantaged, inner city backgrounds differ in their attempts to acquire math-science skills. This use of cognitive style as an independent variable in factor analytic and regression studies has, by no means, exhausted all avenues of inquiry--in point of fact, such studies have only really begun to be used to any significant degree.

This is all to reiterate the point that we no longer need to concern ourselves with attempts to prove that remediation "works". The real issues, I have tried to suggest, involve doing the research and developing the techniques which will allow us to provide each student with the means to learn all that he or she is capable of mastering. Once this has been accepted as a priority, the day when we can serve these students effectively should, hopefully, be close at hand.

FOOTNOTES

1) Leslie, Judith W. A review of postsecondary remedial education research. Office of Budget and Planning, Pennsylvania State University, 1976.

2) Gordon, Edmund. Speech delivered at the National Conference on Remedial/Developmental Programs in Postsecondary Education, Chicago, 1977.

3) Cross, K. Patricia. Accent on Learning: Jossey-Bass, 1976, pp. 24-25.

4) Carroll, John A. A model of school learning. Teachers College Record, 1963, 40, pp. 222-228.

5) Bloom, Benjamin S., Hasting, J.T., Madaus, G. F. Handbook of Formative and Summative Evaluation, McGraw-Hill, 1971, pp. 45-48.

6) Ibid., p. 46.

7) Ibid., p. 48.

8) Sutton, D. G. and Daniel S. Arnold. The effects of two methods of compensatory freshman English. Research in Teaching English, Fall 1974, pp. 241-248.

9) Bloom, Op. Cit., p. 55.

10) Cross, K. Patricia. Beyond the Open Door. Jossey-Bass, 1971, p. 168.

11) Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80, pp. 1-28.

12) Klingelhofer, E. F. and Hollander, Lynne. Educational Characteristics and Needs of New Students: A Review of the Literature. Center for Research and Development in Higher Education, 1973, p. 95.

13) Epps, E. G. and Gurin, P. Black Consciousness, Identity and Achievement: John Wiley, 1975.

14) Epps, E. G. Correlates of Academic Achievement Among Northern and Southern Urban Negro Students, Journal of Social Issues, 1969, 25(3), pp. 55-70.

15) Witkin, Herman; Moore, C. A., Goodenough, D. R., and Cox, R. W. Field-dependent and field-independent cognitive styles and their educational implications. Educational Testing Service, 1976 (Section Three of this paper was developed from the research results listed in this paper).

16) Ibid., p. 14.

17) Ruble, D. N. and Nakamura, C. Y. Task orientation versus social orientation in young children and their attention to relevant social cues. Child Development, 1972, 43, pp. 471-480.

18) Raab, T. J. An experimental study exploring the relationship between various types of reinforcement, cognitive style and learning among sixth grade students (Doctoral dissertation, Rutgers University, 1973). Dissertation Abstracts International, 1974, 34, 3473B. (University Microfilms #73-32, 235).

19) Witkin, et. al. op. cit., p. 31.

20) Nebelkopf, E. B. and Dreyer, A. S. Continuous-discontinuous concept attainment as a function of individual differences in cognitive sytle. Perceptual and Motor Skills, 1973, 36, pp. 655-662.

21) Witkin et. al., op. cit., p. 38.

22) Ibid., p. 40.

23) Di Stefano, J. T., Interpersonal perceptions of field-independent and field-dependent teachers and students (Doctoral dissertation, Cornell University, 1969). Dissertation Abstracts International, 1970, 31, 463A-464A. (University Microfilms #70-11,225).

24) Womack, Leslie. Field independence and achievement in select science skills. unpublished study, 1977.